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PITNEY HARDIN LLP
7 TIMES SQUARE
NEW YORK, NY 10036-7311

EXAMINER

PARKER, DAVID H

ART UNIT PAPER NUMBER

2877

DATE MAILED: 10/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/511,686

Applicant(s)

HANSEN ET AL.

Examiner

David H. Parker

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 16-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 9-15 and 22-27 is/are rejected.
- 7) ☒ Claim(s) 7, 8 is/are objected to.
- 8) ☒ Claim(s) 1-15 and 22-27 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 October 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 10/13/2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Priority

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application (DK) PA 2002 00561, filed on 15 April 2002.

Election/Restrictions

Claims 16-21 withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on September 5, 2006.

Drawings

Figures 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

Drawings 1, 2, 3, and 6 are objected to because: the plane upon which a sectional view is taken should be indicated on the view from which the section is cut by a broken line, as per 37 CFR 1.84(h)(3), and numbered in Arabic numbers followed by a capital letter, as per 37 CFR 1.84(u)(1), e.g., identify the two figures on sheet 1/6 as Prior Art and Fig. 1A and Fig. 1B with section lines showing how Fig 1B is cut from Fig. 1A. Drawing 4 is objected to because: Figures 4a and 4b should be 4A and 4B, in both the drawings and specification.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 308, 401A, 403A, 404A, 406A, 407A, 408A, 410A, 4052A, 4091A, 515,

607, 610, 611, 613, and 618. And, they do not include the following reference character(s) mentioned in the description and claims 7 and 8: 404, 409, 510.

Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities: The references to the claims should be deleted from the specification. On page 22, line 31, reference to Fig. 4B, beam 4051A should be 4051B. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 3, 9, 11, 14, 15, 22, 26 and 27 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3 recites multiple limitations which duplicate antecedent limitations in the base claim or are ambiguous. For example: Independent claim 1, line 9, recites "...at least a first observation field stop (310)...."; Dependent claim 3, line 21, recites "(a) at least a first observation field stop (310)...."; Claim 3, line 22, also recites "...at least a first observation field stop...". There are other similar duplications, such as "observation beam", etc.

Claim 9 recites the limitation "said illumination field stop (307)" in line 2. There is insufficient antecedent basis for this limitation.

Claim 11 recites the limitations "said focusing element" and "said common optical element" in line 3, and "said directional optical element" in line 4. There is insufficient antecedent basis for these limitations.

Claim 14 recites the limitation "wherein said diffractive optical element is a hologram". The disclosure fails to teach how a diffractive optical element or hologram is used in the invention, and neither appears in the figures. The nature of the 112 rejection precludes a reasonable search of the prior art by the examiner.

Claim 15 recites the limitations, wherein said collimating optical element, said focusing element, said common optical element, and said directional optical element are accommodated in single element, said single element comprising a concave mirror, non-planar prism, or a hologram, or a combination thereof. The disclosure fails to teach how said collimating optical element, said focusing element, said common optical element, and said directional optical element are accommodated in single element, and

does not appear in the figures. The nature of the 112 rejection precludes a reasonable search of the prior art by the examiner.

Claim 22 rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: the elements of a light-source illumination-observation assembly (601-610). Note that the use of reference characters is to be considered as having no effect on the scope of the claims, see MPEP § 608.01 (m) paragraph 3.

Claims 26 and 27 provide for the use of an apparatus according to claim 22 or 23 for measuring light retroreflection, light reflection, or both, but, since the claims do not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced. The nature of the 112 rejection precludes a reasonable search of the prior art by the examiner.

Claims 26 and 27 rejected under 35 U.S.C. 112, second paragraph as indefinite since they contain a single claim for both an apparatus and a method of using it. See MPEP § 2173.05(p).

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 26 and 27 are rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 22-24 rejected under 35 U.S.C. 102(b) as being anticipated by Kumagai et al. (US5,777,244).

As to claim 22, Kumagai discloses a method for inspecting the outer appearance of a golf ball and illuminating means therefor comprising: a housing (1); and a light-source illumination-observation assembly (2, c).

As to claim 23, Kumagai discloses all as applied to claim 22, and in addition a diffuser light-source assembly (4).

As to claim 24, Kumagai discloses all as applied to claim 23, and in addition means (c) for determining a reflection coefficient of the measured light reflections of the object.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6, 9-13 rejected under 35 U.S.C. 103(a) as being unpatentable over Harvey et al. (US 5,461,472) in view of Dunne (US 6,212,480).

As to claim 1, Harvey discloses in Fig. 1 and Fig. 2: a method and apparatus for measuring the parallelism of two surfaces comprising: an illumination unit (14, 18, 20 and 22) for providing an illumination beam (24), said illumination beam illuminating an illumination field on the object (42); an observation unit (28 and 58) for providing an observation beam (34), said observation beam comprising light received from an observation field on said illuminated object (42); said observation unit comprising at least a first observation field stop adapted to define a ray boundary of said observation beam (see aperture between beam splitter 28 and focal plane 36); the observation unit further comprising an observation light receiver (58) adapted to provide a measuring signal (see machine vision processor 60); wherein the apparatus comprises a lens common to the illumination unit and the observation unit (16); characterized in that said lens is arranged so that said illumination beam (24) and said observation beam (34) form an overlap therein.

Harvey does not disclose that the observation unit provide a measuring signal which determines a reflection coefficient from said measuring signal; nor does the said

first observation field stop comprises a wall member extending from the observation light receiver towards said lens; wherein the wall member extends only a part of the distance between the observation light receiver and the lens as to limit said ray boundary of said observation beam while maintaining said overlap of said illumination beam and said observation beam inside the lens.

Dunne teaches an apparatus and method for determining precision reflectivity of highway signs and other reflective objects utilizing an optical range finder instrument which comprises an observation unit further comprising an observation light receiver (column 2 lines 27-30) adapted to provide a measuring signal for determining a reflection coefficient (column 2 lines 43-53) from said measuring signal.

It is well known in the art that the use of field stops, light traps, baffles, etc. are useful to attenuate stray light and limit the field of view, and thus improve the performance of optical instruments. In the introduction to Chapter 7 (The effects of stops), Jenkins et al. (Fundamentals of Optics, Jenkins and White, fourth edition, McGraw-Hill, 1976, QC355.2.J46, chapter 7, p. 115) states; "In treating the field of view it is of primary importance to understand how and where the bundle of rays traversing the system is limited. The effect of stops or diaphragms, which will always exist (even if only as the rims of lenses or mirrors), must be investigated."

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the instrument of Harvey, which already provides alternate methods to limit said ray boundary of said observation beam while maintaining said overlap of said illumination beam and said observation beam inside the lens, by

programming the machine vision processor (60) to use the method of Dunne to determine a reflection coefficient from said measuring signal, and thereby measure light reflections of an object. The motivation to modify the instrument of Harvey would be to increase market potential for the existing hardware design by simply providing alternate software, and thus making it a dual purpose instrument.

As to claim 2, the combination of Harvey, and Dunne discloses all as applied to claim 1, and in addition Harvey discloses a second observation field stop between the observation light receiver and the lens and displaced along the direction of propagation of said observation beam from the first observation field stop (see beam entrance aperture of (35)).

As to claim 3 (ignoring the duplicate and ambiguous limitations cited under second paragraph 35 U.S.C.112 above, for examination purposes), the combination of Harvey, and Dunne discloses all as applied to claims 1 or 2, and in addition Harvey discloses said illumination unit comprising: (a) an illumination light source , said illumination light source comprising at least one light source (18) and an illumination aperture stop (20), said at least one light source and said illumination aperture stop being arranged to provide a confined luminous field (24), (b) an illumination field stop [see exit aperture of (12)], (c) an collimating optical element (16), said collimating optical element being adapted to collimate said illumination beam; wherein said observation unit comprises: (b) at least one focusing optical element (16), said at least one focusing optical element being adapted to focus said observation beam, wherein the observation light receiver comprises a light receiver (58) , said light receiver and said observation

aperture stop being arranged to provide a confined receiving field of said focused observation beam; wherein said first observation field stop is adapted to stop light from said illumination unit in reaching said observation light receiver of said observation unit.

As to claim 4, the combination of Harvey, and Dunne discloses all as applied to claims 1 or 2, and in addition Harvey discloses that said first observation field stop extends substantially half the distance between the observation light receiver and the lens.

As to claim 5, the combination of Harvey, and Dunne discloses all as applied to claims 1 or 2, however, Harvey is silent on light reflections. It is known that stray reflections are undesirable in optical instruments, as taught by Jenkins et al. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to ensure that the first observation field stop is adapted to stop light reflections. One of ordinary skill in the art would have been lead to make such a modification since all other interior components would normally also be designed to avoid stray reflections.

As to claim 6, the combination of Harvey, and Dunne discloses all as applied to claim 3, and in addition Harvey discloses said collimating optical element and said focusing optical element accommodated in said lens (16).

As to claim 9, the combination of Harvey, and Dunne discloses all as applied to claims 1 or 2, and in addition Harvey discloses said illumination field stop (22) is fixed to said wall member (12).

As to claim 10, the combination of Harvey, and Dunne discloses all as applied to claim 3, and in addition Harvey discloses a directional optical element (55') for lateral direction of said collimated illumination beam.

As to claim 11, the combination of Harvey, and Dunne discloses all as applied to claim 3, and in addition Harvey discloses said collimating optical element, said focusing element, said common optical element, and said directional optical element are selected from the group consisting of refractive optical elements, reflective optical elements, and diffractive optical elements, or a combination thereof.

As to claim 12, the combination of Harvey, and Dunne discloses all as applied to claim 11, and in addition Harvey discloses wherein said refractive optical element is a lens, lens assembly, prism, or a combination thereof.

As to claim 13, the combination of Harvey, and Dunne discloses all as applied to claim 11, and in addition Harvey discloses wherein said reflective optical elements (55') is a mirror, preferably a planar mirror or a non-planar mirror, or a combination thereof.

Claim 25 rejected under 35 U.S.C. 103(a) as being unpatentable over Kumagai as applied to claim 23 above, and further in view of Gionet (US 3,527,913).

Kumagai discloses all as applied to claim 23, but does not disclose a second light source or means for selecting a light source between said light source illumination-observation assembly and said diffuser light-source assembly.

Gionet discloses a single pole double throw switch with a one piece contact spring with two U-shaped segments center biasing the actuator. Gionet teaches the use

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of a switch for selectively controlling energization of either a first or second electric circuit.

Therefor, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide alternate lighting means and to use a switch, as taught by Gionet, to select light sources. The motivation to modify the method of Kumagai would be to enhance the measurement capabilities and thus increase market potential.

Allowable Subject Matter

Claims 7 and 8 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

As to Claims 7 and 8, the prior art of record taken along or in combination, fails to disclose or render obvious an apparatus wherein the collimating optical element has an optical axis which is displaced relative to the optical axis of the observation aperture stop or is tilted so that its optical axis is non-parallel to the optical axis of the observation aperture stop. This, and the fact that beams 305 and 306 are tilted with respect to each other, to match the angle between a headlight and driver, differentiates the claimed apparatus from an autocollimator.

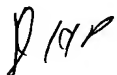
As allowable subject matter has been indicated, applicant's reply must either comply with all formal requirements or specifically traverse each requirement not complied with. See 37 CFR 1.111(b) and MPEP § 707.07(a).

Conclusion

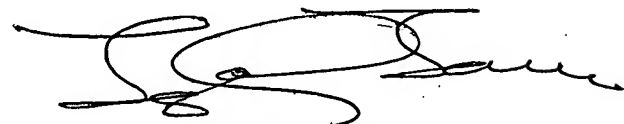
Any inquiry concerning this communication or earlier communications from the examiner should be directed to David H. Parker whose telephone number is (571)272-7356. The examiner can normally be reached on 8:30am to 5:00pm (EDT) Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley can be reached on (571)272-2059. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



David H. Parker
Patent Examiner
Art Unit 2877
August 24, 2006



LAYLA G. LAUCHMAN
PRIMARY EXAMINER